Space Weather Forecast

Issued on Thursday, 17 March 2022 at 00:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated M-flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity has been mainly Very Low, however at the start of the period activity was still Low from the declining phase of the Moderate flare late on 15th. There are currently two numbered sunspot regions on the visible disc. The larger, more complex region located in the northwest quadrant. The other group consists of a single, small unipolar spot in the northeast quadrant.

Two filament eruptions and subsequent CMEs from the northeast quadrant were observed on the UTC afternoon on 16th, and are awaiting modelling results to determine whether there may be an Earth directed component. No other Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds have been slowly declining from slightly elevated to background levels. The magnetic field carried by the winds has been weak, with the north-south directed component becoming largely negative (southward) , although also weak. Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at mostly Low or Very Low levels with an ongoing chance of an isolated M-class flare, mainly from the large region in the northwest of the disc.

Solar Wind / Geomagnetic Activity: There is one slow weak CME observed from the south of the Sun on 13 March. This will likely pass below Earth, but may give a glancing impact on day 1 (17th). The filament eruptions and subsequent CMEs from the northeast quadrant on 16th are awaiting modelling results and may have an Earth directed component. Otherwise, the next potential coronal hole fast wind arrival is likely to be on the 20th (day 4) from CH66/-, a northern extension of the southern crown coronal hole. Geomagnetic activity is expected to be mostly Quiet with occasional Unsettled intervals, with an increased chance of Active intervals on day 4 (20th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms, although there is a slight chance of an increase in response to any larger flares that may occur.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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